INTRODUCTION

As early as the 1960s, the potential and the power of computer-based training became evident with the introduction of simulations (Harden, 2002.) Since that time, many of the initial technical limitations of technology have been addressed. The advent of personal computers, as well as the widespread accessibility of the Internet, has created an environment which is conducive to utilizing technology in many different ways, specifically for presenting courses via computer (Harden, 2002.)

On-line delivery of courses (also called e-learning) has evolved from a unique format into one which is becoming widely used and more adaptable. The introduction and development of a wide range of support services and technical assistance has enabled instructors to create courses which offer components ranging from video clips, to presentations of varying types, to tests and surveys which can be compiled and/or analyzed by the on-line course management system. In fact, e-learning is no longer just a passing fad, but has become a mainstream tool in education (Harden, 2002.) With the introduction of this resource as a method of organizing course material, the impact of the instructor becomes a matter of how well that individual can arrange and present the content of a class. Web design principles (such as layout, visual components, etc.) become an important aspect of instruction and directly impact the effectiveness and success of classes which are delivered on-line. Furthermore, these become an important part of the students' perceptions of a course as well as their attitude toward it. These factors contribute to the importance of obtaining responses which allow one to assess the attitudes of those enrolling in and completing classes delivered in this manner.

DEFINITIONS

Blackboard – The *Blackboard Learning System*™ is a software platform which provides an on-line system for course management which can be customized by instructors to provide a range of components.

Digital Drop Box – A feature of the Blackboard Learning System allows instructors and students to exchange files via a storage process. The Digital Drop Box stores files on Blackboard and records the date and time the files were sent. Students can access their own Digital Drop Box from the Tools area while instructors may access the Digital Drop Box from the Control Panel.

Discussion Board – The discussion board allows threaded discussions and asynchronous" communication (not everyone has to be online at the same time). Conversations are logged and organized within a blackboard site. The instructor develops the forum and then makes this available to students who can then post comments and/or initiate threads of discussion.

E-learning – This term describes those educational experiences (usually in the form of classes) which are provided either solely or partially via the Internet utilizing computers. The term encompasses all related procedures and activities which comprise this type of course.

On-line Course – This type of class is defined by the delivery of information in a web-based or Internet-based format.

Simulation – This application permits the student to role-play, practice specific skills, or replicate certain types of behavior in a computer situation which attempts to closely replicate the actual environment in which such activity may occur.

METHODOLOGY

Purpose and Objectives

The purpose of this study was to determine the satisfaction levels with online course delivery of students (n = 45) enrolled in BlackBoard courses during 2003, and 2004 at the University of Tennessee at Chattanooga (UTC).

The survey used in this study was designed to generate attitudinal information from students enrolled in online courses during the course of three semesters beginning in the Spring of 2003, and ending in the Spring of 2004 concerning their perceptions of the effectiveness of online courses offered via BlackBoard at the University of Tennessee at Chattanooga.

During the time period evaluated, a total of 61 classes were offered online, the majority of which were within the College of Health, Education and Applied Professional Studies (41). Other colleges offering online courses included in this study were the College of Engineering (7), and the College of Criminal Justice (12). A total of 431 students were enrolled in online courses during the evaluative period. Each student was contacted via email and was given the opportunity to complete and return the attached survey. Of the 431 surveys sent, 117 were returned as undeliverable. This is understandable as it is possible that many students had closed email accounts upon graduation, program completion, transferal, etc. Therefore, a total of 284 surveys were emailed to respondents. Of this number, 45 students completed and returned the surveys. The response rate was 15.8%. Reasons for the low response rate include loss of need to check student email account due to possibly no longer being enrolled in online courses,

no longer a student, lack of time to complete survey, failure to access official university email accounts, unwillingness, etc.

The respondents were first asked to provide demographic information including degree program identification, licensure area identification (education students), estimated date of program completion, and BlackBoard course participation identification. Participants were also asked to identify their reasons for taking an online course, the components of BlackBoard utilized in any online courses taken, how they gained access to BlackBoard, and the most common times during the week and day that BlackBoard was accessed.

The majority of the survey consisted of a scaled response mechanism (Likert scale) composed of a six-point rating scale in which the attitude of the respondent was measured on a continuum from strongly disagree to strongly agree. A middle or neutral category was omitted to deter "fence sitting" by respondents. Possible responses included strongly disagree, moderately disagree, disagree, agree, moderately agree, and strongly agree. Numerical values were assigned to responses as follows: strongly disagree (1), moderately disagree (2), disagree (3), agree (4), moderately agree (5) and strongly agree (6).

A period of three weeks was allowed for surveys to be completed and returned. The majority of surveys were returned via email although a few were returned by hand. Upon collection of the surveys, tabulation of data began with an itemization of demographic information. The responses of the respondents were then tabulated for each statement.

Of the forty-five participants, seventeen were seeking a Bachelor of Science degree in some area of education, eight were seeking a Master of Education degree, two were seeking Educational Specialist degrees, two were working toward a Master of Science in Engineering Management, one was seeking a clinical doctorate in physical therapy, one a Master of Science degree, and fourteen were non-degree students. The majority (fourteen) of the respondents were expecting to complete their programs in 2005, ten were expecting to graduate immediately (2004), and the remainder were anywhere from two to four years from degree completion. Of those participants who were education majors, the following licensure areas were indicated: exceptional learning, natural science, foreign language, music, theater, middle grades, math, health, pre-K-4, English, ESL and MSL k-4.

During the evaluative period, a total of sixty-one classes were offered via BlackBoard (totally online) at the University of Tennessee at Chattanooga. Twenty of those classes were offered during the spring of 2003, seventeen during the fall of 2003, and 24 were offered in the spring of 2004. Of the sixty-one classes, twelve were criminal justice courses, twenty-eight were education courses, seven were engineering management, seven were physical therapy, and one was a nursing course.

RESULTS

Tabulation of Responses

Table 1 provides the number of actual responses for each attitudinal category per statement. Table 2 provides a tabulation of valued responses for each statement according to the six-point numerical scale previously mentioned, a total numerical score for each

statement, and a mean and standard deviation for each statement. Table 3 provides

participant percentage responses for each statement.

Table 1

Black Board Participant Actual Responses

Question	strongly disagree	moderately disagree	disagree	agree	moderately agree	strongly agree	did not answer	Total
a	4	1	9	11	9	9	2	45
b	0	4	3	10	11	15	2	45
c	1	2	3	13	5	18	2	45
d	0	1	2	14	11	15	2	45
e	0	0	0	9	14	20	2	45
f	0	2	3	9	11	13	7	45
g	1	1	2	10	12	16	3	45
h	2	0	2	8	10	20	3	45
i	0	0	5	12	9	17	2	45
j	0	1	5	11	14	12	2	45
k	0	1	3	9	13	17	2	45
l	0	1	0	13	6	23	2	45
m	0	2	1	7	6	26	3	45
n	0	1	1	6	8	27	2	45
SUM	8	17	39	142	139	238	36	630

Table 2

Participant Valued Responses, Means, Standard Deviations

Question	SD (1)	MD (2)	D (3)	A (4)	MA (5)	SA (6)	DNA (0)	Total	Mean	STD. DEV.
a	4	2	9	44	45	54	0	158	3.51	3.99
b	0	8	9	40	55	90	0	202	4.49	5.56
c	1	4	9	52	25	108	0	199	4.42	6.58
d	0	2	6	56	55	90	0	209	4.64	6.60
e	0	0	0	36	70	120	0	226	5.02	8.08
f	0	4	9	36	55	78	0	182	4.04	4.89
g	1	2	6	40	60	96	0	205	4.56	6.13
h	2	0	6	32	50	120	0	210	4.67	6.97
i	0	0	15	48	45	102	0	210	4.67	6.50
j	0	1	15	44	70	72	0	202	4.49	5.80
k	0	2	9	36	65	102	0	214	4.76	6.63
l	0	2	0	52	30	138	0	222	4.93	8.66
m	0	2	3	28	30	156	0	219	4.87	9.00
n	0	2	3	24	40	162	0	231	5.13	9.54

Note: SD = strongly disagree; MD = moderately disagree; D = disagree; MA =

moderately agree; SA = strongly agree; DNA = did not answer

Table 3

Participant Percentage Responses

Question	strongly disagree %	moderately disagree %	disagree %	agree %	moderately agree %	strongly agree %	did not answer %
a	8.88	2.22	20	24.4	20	20	4.44
b	0	8.88	6.66	22.2	24.4	33.3	4.44
c	2.22	4.44	6.66	28.8	11.1	40	4.44
d	0	2.22	4.44	31.1	24.4	33.3	4.44
e	0	0	0	20	31.1	44.4	4.44
f	0	4.44	6.66	20	24.4	28.8	15.5
g	2.22	2.22	4.44	22.2	26.6	35.5	6.66
h	4.44	0	4.44	17.7	22.2	44.4	6.66
i	0	0	11.1	26.6	20	37.7	4.44
j	0	2.22	11.1	24.4	31.1	26.6	4.44
k	0	2.22	6.66	20	28.8	37.7	4.44
l	0	2.22	0	28.8	13.3	51.1	4.44
m	0	4.44	2.22	15.5	13.3	57.7	6.66
n	0	2.22	2.22	13.3	17.7	60	4.44

Summary of Research Statements

Statement a: I felt as much a part of my BlackBoard class as a regular class. Of

those who responded, 20.0% strongly agreed, 20.0% moderately agreed, 24.4% agreed,

20.0% disagreed, 2.22% moderately disagreed, and 8.88% strongly disagreed (4.44% did

not respond to this statement).

Statement b: I learned as much in this class as a regular college class. A total of

33.3% strongly agreed, 24.4% moderately agreed, 22.2% agreed, 6.66% disagreed,

8.88% moderately disagreed, and 0% strongly disagreed (4.44% did not respond to this

statement).

Statement c: I found it easy to get started using BlackBoard. The statistics indicated that 40.0% of the respondents strongly agreed with this statement while 11.1% moderately agreed, 28.8% agreed, 6.66% disagreed, 4.44% moderately disagreed, and 2.22% strongly disagreed (4.44% did not respond to this statement).

Statement d: Navigating my BlackBoard course site was easy. A total of 33.3% of the respondents strongly agreed with this statement while 24.4% moderately agreed, 31.1% agreed, 4.44% disagreed, 2.22% moderately disagreed, and 0% strongly disagreed (4.44% did not respond to this statement).

Statement e: Pertinent course documents such as the syllabus and assignments were easily located on the site. A total of 44.4% strongly agreed, 31.1% moderately agreed, 20% agreed, 0% disagreed, 0% moderately disagreed, and 0% strongly disagreed with this statement while 4.44% did not respond.

Statement f: Submitting assignments via the digital drop box was a simple process. Of those responding, 28.8% strongly agreed with this statement, while 24.4% moderately agreed, 20.0% agreed, 6.66% disagreed, 4.44% moderately disagreed, and 0% strongly disagreed (15.5% did not respond to this statement).

Statement g: I regularly took part in the discussion board. Of those responding, 35.5% strongly agreed with this statement, while 26.6% moderately agreed, 22.2 % agreed, 4.44% disagreed, 2.22% moderately disagreed, and 2.22% strongly disagreed (6.66% did not respond to this statement).

Statement h: My professor/instructor promptly returned emails. A total of 44.4% of the respondents strongly agreed with this statement, while 22.2% moderately agreed,

17.7% agreed, 4.44% disagreed, 0% moderately disagreed, and 4.44% strongly disagreed (6.66% did not respond to this statement).

Statement i: The amount of course work was comparable to that of a regular college course. Of those responding, 37.7% strongly agreed with this statement, while 20.0% moderately agreed, 26.6% agreed, 11.1% disagreed, 0% moderately disagreed, 0% strongly disagreed (4.44% did not respond to this statement).

Statement j: I found the instructions on my BlackBoard course site easy to understand. A total of 26.6% of the participants strongly agreed with this statement, while 31.1% moderately agreed, 24.4% agreed, 11.1% disagreed, 2.22% moderately disagreed, and 0 % strongly disagreed (4.44% did not respond to this statement).

Statement k: Since my experience with BlackBoard I now feel confident in my BlackBoard abilities. Of those responding, 37.7% strongly agreed with this statement, while 28.8% moderately agreed, 20.0% agreed, 6.66% disagreed, 2.22% moderately disagreed, and 0% strongly disagreed (4.44% did not respond to this statement).

Statement l: Overall, I believe that my online learning experience(s) was (were) positive. A total of 51.1% of the respondents strongly agreed with this statement, while 13.3% moderately agreed, 28.8% agreed, 0% disagreed, 2.22% moderately disagreed, and 0% strongly disagreed (4.44% did not respond to this statement).

Statement m: I would like to see BlackBoard become a more established part of learning at the University of Tennessee at Chattanooga. Of those responding, 57.7% strongly agreed with this statement, while 13.3% moderately agreed, 15.5% agreed, 2.22% disagreed, 4.44% moderately disagreed, and 2.22% strongly disagreed (6.66% did not respond to this statement).

Statement n: If the opportunity arose, I would take another BlackBoard course at the University of Tennessee at Chattanooga. A total of 60.0% strongly agreed with this statement, while 17.7% moderately agreed, 13.35 agreed, 2.22% disagreed, 2.22% moderately disagreed, and 2.22% strongly disagreed (4.44% did not respond to this statement).

Summary of Student Responses to Components of BlackBoard Usage

There are currently sixteen components to online BlackBoard courses at the University of Tennessee at Chattanooga. An "announcements" component allows instructors to prominently post pertinent course announcements. The "course information" constituent is an area in which instructors might post information such as the catalog description of the course, instructor contact information, disabilities statements, plagiarism policies, required textbooks, etc. Another component entitled "course documents" is an area in which a professor might post the course syllabus, scoring rubrics, course calendars, or other pertinent course documents. "Staff information" is an area students may access to learn about the course instructor. The component entitled "assignments" is where a student would look for a list of assignments as well as descriptions and due dates of those assignments. "External links" is where an instructor might post links to relevant outside web sites, documents, articles, video clips, etc. The "surveys" constituent is a convenient location for surveys and other statistical documents as posted by the instructor. Students may also access their own "grades" as the course progresses. The gradebook computes the students' scores for tests and quizzes taken online, displays scores entered by instructors for assignments they have graded, indicates class averages, etc. A "course calendar" is also available to help students keep

track of text readings, assignment due dates, examinations, etc. A "virtual classroom" is a

component of BlackBoard that allows students and the instructor to enter a chat room at a

designated time and engage in a live discussion. The "discussion board" is an area where

students respond to questions posted by the instructor as well as responses of their

classmates. BlackBoard automatically generates a wide variety of statistics pertaining to

discussion board usage such as the percentage of time each student spent on the

discussion board site, the times and dates each student entered the area, etc. In addition,

BlackBoard generates similar statistics for all other areas on the site. BlackBoard has a

"tests and quizzes" component that allows students to take timed or non-timed

examinations in various formats including multiple choice, true/false, short answer, and

matching. BlackBoard automatically grades these examinations, provides feedback, and

posts scores in the grade book. The "digital dropbox" is a mailbox within which students

drop assignments. The time and date is automatically recorded whenever an assignment

is dropped into the drop box by each student. BlackBoard provides students and the

instructor with the capability to email selected members or all members at once.

Instructors may elect to group students together in study groups or to work on projects or

other activities together. The "group pages" feature allows specific groups of students to

engage in discussions via the discussion board or simultaneously in different virtual

classrooms. A "student manual" component is also present that provides organized

instructions to students concerning the BlackBoard learning system. The student manual

contains an introduction to BlackBoard, sections on course content, communication,

tools, etc.

As part of the survey, students were asked to indicate which portions of BlackBoard were utilized during the course(s) in which they were enrolled. Forty-two of the forty-five respondents indicated making use of the "announcements" component of BlackBoard, while forty-one accessed the "course documents" and "course information" section. Seventeen accessed the "staff information" component. Forty-four of the forty-five participants indicated making use of the "assignments" constituent and thirty-nine participated in the "discussion board." Seventeen used "external links," twenty-six completed a survey in the "survey" section, twenty-six took examinations or quizzes using that component of BlackBoard, and thirty-seven accessed their grades via the online grade book. Twenty-six reported using the "course calendar" and thirty-five used the email component. Five indicated making use of "group pages" and two were involved in the "virtual classroom" portion of their courses. Ten indicated using the "student manual."

When asked why they chose to take a class via BlackBoard at UTC, thirty-four indicated they chose that method because it allowed them to complete a class on their own time and at their own pace, one indicated that he/she did not have transportation to campus, five had childcare issues that impeded taking courses on campus, twenty-one had work schedules that interfered with taking a course on campus, and five indicated other reasons which were not specifically stated.

Participants were also asked how they gained access to BlackBoard for their coursework. Forty-four of forty-five responding indicated that they predominantly used their own computers to access their course(s). Two also used computers belonging to

relatives, nineteen used computers at school, one used a friend's computer, one used a computer at a public library, and five used their work computers.

When asked when they most used BlackBoard, eight indicated weekdays, one weekends, and thirty-six indicated that they accessed BlackBoard on both weekends and weekdays. Respondents were also asked what time of day they most often accessed BlackBoard. Sixteen responded that they accessed the site(s) during the day, while twenty-nine indicated that they accessed it mainly in the evenings.

Summary of Student Responses to Open-Ended Questions

Students were asked to identify what they liked most and least about their BlackBoard courses. In analyzing this section of the survey, a color-coded classification system was used to organize the responses. Color-coded analysis revealed numerous thematic responses that were repeated by several respondents. A list of the revealed thematic responses (liked most) follows along with an account of the number of participants who mentioned the same theme:

1. I can complete the coursework at my own pace (16).

2. Convenience/accessibility/flexibility (14).

3. Don't have to drive to campus/can work at home (9).

4. Fits my work schedule (5).

5. Easy (2).

6. Enjoy the discussion board (3).

7. Learned how to find information on the World Wide Web (1).

8. How up-to-date BlackBoard is (1).

A list of revealed thematic responses (liked least) follows along with an account of the

number of participants who mentioned the same theme:

1. Nothing (12).

2. Less engagement with instructor (2).

3. Little feedback (2).

4. Assignments getting lost in email or the digital drop box (1).

5. The time it takes to go through course messages (1).

6. I worried that I was not getting all I needed to get out of the course (1).

7. It was confusing at first (1).

8. I felt out of the loop (1).

9. I felt alone (1).

10. I worried about getting behind (2).

11. Difficult to talk directly with instructor (1).

12. It is difficult to get to know the instructor (1).

13. Discussions that are not face-to-face are difficult to interpret (1).

14. Too expensive (1).

15. Running out of time in timed tests (1).

16. Digital dropbox is difficult to use (1).

17. I need an actual classroom setting to succeed (1).

18. Not meeting other students face-to-face (1).

19. Not knowing when a new discussion thread began (1).

20. Reading the text (1)

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DISCUSSION

The statement that elicited the greatest disagreement among participants was the first one (I felt as much as part of my BlackBoard class as a regular class). A total of 20.0% of the participants at least disagreed with this statement, while some moderately and strongly disagreed. Several of the open-ended statements also supported the feeling of disconnectedness experienced by students participating in online coursework, especially those taking a BlackBoard course for the first time. Students indicated feeling "alone," and "out of the loop." This is not surprising since transitioning from a traditional classroom setting (in which students and the instructor convene together physically, interact together, and get to know one another both professionally and sometimes personally) to a more or less isolated setting (in which the student interacts with classmates and the instructor electronically, possibly from a remote site), is quite an adjustment. Numerous studies within the literature cite this as a common problem with distance education (Bates, 1995; Farrington & Bronack, 2001) although it has been noted that effective feelings of community can be fostered in an online setting (Roval, 2001).

The vast majority (>79%) of student respondents indicated that they felt as though they had learned as much in their online course(s) as they would have learned in a regular, course taken on-campus. This pronouncement supports the findings in the literature that indicate Internet students perform at least as well as, if not superior to, students in a regular class (King & Hildreth, 2001; Moore & Thompson, 1990; Schulman & Sims, 1999; Verduin & Clark, 1991).

A preponderance (> 79%) of the participants in this study indicated that they found it easy to get started using BlackBoard. Over 80% also indicated that they found

the instructions on their BlackBoard course site(s) easy to understand. The student manual certainly is conducive to students learning how to navigate their BlackBoard course sites although most students surveyed did not report making use of this component of the learning system. Therefore, the researchers must surmise that the majority of the respondents learned the BlackBoard system through exploration and experimentation without a great degree of difficulty.

All of the students (with the exception of those who did not respond to this question) indicated that pertinent course documents were easily located at their course sites. BlackBoard's instructor productivity tools make it relatively simple to manage course documents such as syllabi and assignments, and the panel display seen by students clearly indicates where these documents can be found.

Greater than 80% of the students taking part in this survey indicated that submitting documents to instructors via the digital drop box was a simple process. Most of the students participating (>80%) also indicated that they regularly participated in discussions via the discussion board. Other students disagreed, stating that the discussion board component was not utilized in their particular course(s). Furthermore, greater than 80% of the respondents indicated that their instructors promptly returned emails. A couple of students commented in the open-ended section of the survey that they experienced less engagement with their instructors than they would have liked. The literature indicates, however, that online instruction often results in more interaction and more personal and timely feedback than what would occur in a traditional and much larger classroom setting (Hirumi & Bermudez, 1996).

Greater than 80% of the participants indicated that the amount of coursework was comparable to that of a regular college course. Certainly the online learning system can provide a multitude of learning resources in one convenient location (documents, links to documents, links to video clips and web sites, communication links to instructors and classmates, quizzes and tests, posted works of peers, grades, visuals to clarify concepts, lecture notes, readings, presentation stacks, etc.). Therefore, students participating in an online course format should be capable of producing at least a comparable amount of coursework as that of students in traditional classroom settings, if not more so and have a larger number of resources from which to draw than their non-online classmates.

The last four statements of the survey asked students to respond attitudinally to the amount of confidence in using the BlackBoard learning system they perceive to have gained from participating in an online BlackBoard course, their overall views of the BlackBoard learning system, the likelihood that they will enroll in another online course, and whether or not they would like to see more courses offered via BlackBoard at UTC. Greater than 80% of the participants responded favorably to each of the last four statements. Overwhelmingly, students rated their BlackBoard course experiences positively and would enroll in another online course if the opportunity arose.

FURTHER RESEARCH QUESTIONS

1. Are there some courses which cannot be delivered via on-line format?
2. Is it possible to deliver an on-line course which provides the same quality of instruction as that offered in a course which meets face-to-face?
3. Are there implications for altering on-line courses which should be considered as technology becomes more elaborate?

4.   Does the computer system utilized by a student pose problems for those who do not possess or have ready access to more advanced systems?

5.   Is the computer course format user-friendly enough to be successfully negotiated by individuals who have limited computer knowledge?

6.   Can relationships between student and instructor or student and student still evolve using the on-line delivery system?

CONCLUSIONS

The need to provide courses which allow non-traditional delivery has lead to the increasing use of computers for on-line classes. Students have begun to regard this as a particularly appealing format, especially when this permits them to fulfill course requirements in a time frame most suitable for their own circumstances. Although the initial use of computers for classes via the Internet emerged at the university level, it is now being adapted for use at high school levels and even in the lower grades. The potential for changing the method of instruction and for offering a much greater range of courses via computer is increasing rapidly. In fact, one of the areas which appears to have the possibility of greatest value is the economy of delivery. Institutions which cannot provide certain classes due to low enrollment or lack of certified instructors can partner with other schools to insure that students will be able to take the courses desired or even necessary to complete programs in which they are enrolled.

Those who would cite Internet courses as ineffective and inefficient are usually teacher who are "steeped in traditional approaches to education [and] …find it difficult to accept that students can learn effectively and efficiently on-line" (Harden, 2002, 470.) No longer is the concept of a student working in isolation the image which is most readily

associated with a computer-delivered course. The other obstacle formerly cited by those

questioning the value of e-learning relates to the fear that teachers may lose jobs;

however, the many roles which are required for successful development and presentation

of an on-line course have lead to the discovery that teachers will still be a vital part of

these classes. Instead of lecturing to a group within the four walls of a classroom, the

instructor may develop resources, spent time creating an appropriate instructional

organization, or simply evolve into facilitators of learning experiences. Each of these

tasks is vital for e-learning opportunities if they are to prove successful for both student

and teacher.

　　　　With limited exceptions, education and educators are resistant to change. It is

imperative that instructors, curriculum developers, and students understand the potential

e-learning provides and recognize how it may change and even improve the learning that

occurs. Rather than viewing on-line courses as disruptive, individuals should strive to

view them as challenging and varied experiences which can add to the overall

educational program. Much like courses which meet regularly and provide the chance for

personal interaction between students and instructors, the ultimate success of on-line

classes will rely on the preparation which preceded the student's enrolling in and

navigating his/her way through this unique and promising type of experience.

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